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10/511,290	10/14/2004	Raimo Leimala	1034281-000025	1867

  

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EXAMINER	
YANG, JIE	

  

ART UNIT	PAPER NUMBER
1793	

  

NOTIFICATION DATE	DELIVERY MODE
01/25/2010	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/511,290	<b>Applicant(s)</b> LEIMALA, RAIMO	
	<b>Examiner</b> JIE YANG	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 October 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-5,8-13 and 15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5,8-13 and 15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                     |                                                                   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____                                                         | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

Claim 1 has been amended; claims 6-7 and 14 are cancelled, and claims 1-5, 8-13, and 15 are pending in application.

#### ***Status of the Previous Rejection***

The previous rejection of 1, 5, 8-9, and 14-15 under 35 U.S.C. 102(b) as anticipated by Cupertino et al (US Re 36,118, thereafter US'118) is withdrawn in view of the applicants' amendment/remarks filed on 10/01/2009.

The previous rejection of 2-4 and 13 under 35 U.S.C. 103(a) as being obvious over US'118 in view of Partridge (US 6,165,367, thereafter US'367) is withdrawn in view of the applicants' amendment/remarks filed on 10/01/2009.

The previous rejection of 10-12 under 35 U.S.C. 103(a) as being obvious over US'118 in view of Hyvarinen et al (US 6,007,600, thereafter US'600) is withdrawn in view of the applicants' amendment/remarks filed on 10/01/2009.

However, upon further consideration, a new ground(s) of rejection is made as following, which makes the present action non-final.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 5, 8-12, and 15 are rejected under 35 U.S.C. 103(a) as being obvious over Hyvarinen et al (US 6,007,600, thereafter US'600) in view of Cupertino et al (US Re 36,118, thereafter US'118).

Regarding claim 1, US'600 teaches a method for producing copper in a hydrometallurgical process from copper-bearing raw material. The copper-bearing solution obtained from the leaching is subjected to reducing and solution purification (Abstract of US'600). US'600 teaches monovalent copper in a chloride-base solution (Col.2, lines 44-67 of US'600), which reads on the removal of one or more metal impurities in chloride-base copper recovery process comprising monovalent copper as recited in the instant claim. US'600 teaches that impurities of the CuCl-NaCl solution are removed by using known reagents (Col.3, lines 59-63 of US'600). US'600 does not specify apply chelating ion-exchange resin to remove one or more metal impurities. US'118 teaches a method for separating a metal selected from the group of magnesium, copper, titanium, iron, zinc from an organic complex thereof (Col.1, lines 8-10 of US'118). US'118 teaches applying a chelating ring resin to extract the metal from the aqueous solution in the form of a complex of the metal and the extractant (Col.1, lines 11-19, examples 5-6 of US'118, and claims 1-10), which reads on the method of removal impurities by

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contact an aqueous with a chelating ion-exchange resin and removing the metal impurities from said solution using said chelating ion-exchange resin. US'118 teaches that the compound of organic phase are valuable for the selective extraction of antimony and /or bismuth contaminants from the highly acidic solutions used in copper refining (Col.3, lines 19-27 of US'118), which reads on the limitation of the chelating ion-exchange resin binding one or more metal impurities and not binding copper in the instant claim. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply chelating ion-exchange resin to remove metal impurities as demonstrated by US'118 in the process of US'600 because US'118 teaches the method is particularly effective for the recovery of metals include chromium, manganese, cobalt and copper (Col.4, lines 60-66 of US'118).

Regarding the limitation of the solution having an acidic or neutral pH of at least 6 and alkali chloride content of at least 200g/l in the instant claim 1, US'118 teaches the metal is obtained in weakly acid aqueous solution so that it can be precipitated, for example as the hydroxide or oxide, by neutralization of the small amount of acid with a small amount of alkali (Col.2, lines 1-7 of US'118) and US'118 teaches a

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method comprises treating the complex with a weakly acid aqueous solution of an alkali metal or alkaline earth metal chloride having a chloride content of at least 4 molar (Claim 1 of US'118, 4 molar NaCl is about 232g/l—noted by examiner).

Regarding claim 5, US'118 teaches the method including metal complexed with an organic complexing agent capable of being stripped with an aqueous acid, which includes zinc, lead, iron, or manganese (Col.4, line 60 to Col.5, line 4 of US'118), which is the same metals as recited in the instant claim.

Regarding claim 8, US'118 teaches the aqueous solution with pH value of 2.0, which reads on the acidic environment as claimed in the instant claim.

Regarding claim 9, US'118 teaches the metal is obtained in weakly acid aqueous solution so that it can be precipitated, for example as the hydroxide or oxide, by neutralization of the small amount of acid with a small amount of alkali (Col.2, lines 1-7 of US'118), which reads on the neutral environment as recited in the instant claim.

Regarding claims 10 and 11, US'600 teaches: "...a countercurrent leaching of a sulfidic copper material, such as chalcoppyritic copper concentrate, in a chloride milieu, so that the obtained product is essentially iron-free alkali chloride-

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copper chloride solution, where the copper is mainly monovalent..."(Col.2, Line 44-67 and also refer to Fig.1-3).

US'600 shows "...the leaching is performed into a circulating NaCl solution..." (Col.3, Line 35-46 and refer to Fig.1-3). US'600 also teaches: "The precipitation is carried out by means of sodium hydroxide..." (Col.4, Line 3-19, refer to Fig. 1-3 step 13).

US'600 teaches the similar hydrometallurgical process by applying the same copper-contained solution as recited in the instant invention.

Regarding claim 12, US'118 further teaches different metals (Fe, Ni, Zn, Cu) reacted with different strip solutions (A= 0.5 molar HCl; B= 0.5 Molar HCl +2.75 molar  $\text{CaCl}_2$ ) in example 4 (Col.7, Line 6-43 of US'118). The concentration levels of Fe, Ni and Zn in the aqueous phase after reacted with strip solution are less than 500 ppm (1ppm = 1 mg/L for  $\text{H}_2\text{O}$ — noted by examiner). This concentration range overlaps the limitation as recited in the instant claim.

Regarding claim 15, US'600 does not specify the amount of monovalent copper content of 30-100g/l as recited in the instant claim, US'118 teaches an acid strength of up to 0.5 molar above the stoichiometric requirement for stripping the metal the metal whereby said complex is decomposed and metal ions are

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transferred to the aqueous solution (Claim 1 of US'118, 0.5 molar copper is about 32g/l—noted by examiner, also refer to the example 4 of US'118).

Claims 2-4 and 13 are rejected under 35 U.S.C. 103(a) as being obvious over US'600 in view of US'118, and further in view of Partridge (US 6,165,367, thereafter US'367).

Regarding claims 2-4, US'118 teaches that it is known in the arts that the organic complex is produced from an aqueous solution of metal salt with a chelating resin. This point is further evidenced by US'367. US'367 teaches a method for selectively removing a heavy metal from an aqueous waste streams and more particularly to methods for reducing the heavy metal content in the waste steam to sub-ppm level (Col.1, Line 5-9 of US'367). US'367 teaches: "...providing a chelating resin containing amino-phosphonic group for capturing the heavy metal ions..."; "...wherein the chelating resin is a styrene divinylbenzene copolymer..." (Claims 1-4 of US'367); US'367 teaches the resin' group can be "represented as:  $\text{-NH-CH}_2\text{-PO}_3\text{Na}_2$ " (Col.2, Line 22-37); and US'367 also tests "...a chelating resin with iminodiacetic acid functional group..." (Col.4, Line 38-41). Compared with the instant invention, US'367 overlaps the



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limitations related to chelating ion-exchange resin recited in the instant claims 2-4. The similar hydrometallurgical process to extract heavy impurities with the similar ion exchange resin taught by US'367 renders prima facie obvious. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to choose a suitable ion-exchange resin as demonstrated in US'367 in the process of US'600 in view of US'118.

Regarding claim 13, US'600 teaches that the reduced granular or pulverous copper product is further subjected to melting and casting in order to produce commercial-grade copper (Col.1, lines 17-20 of US'600). US'367 teaches "methods for selectively removing a heavy metal from an aqueous waste streams and more particularly to methods for reducing the heavy metal content in the waste steam to sub-ppm level." (Col.1, Line 5-9, this metal impurity level is compatible with the level that recited by instant invention—refer to the instant claim 12). This means it would have been obvious to one of ordinary skill in the art to get "cathode copper LME-A grade copper" as demonstrated in US'367 in the process of US'600 in view of US'118.

***Response to Arguments***

Applicant's arguments with respect to claim 1-5, 8-13, and 15 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jie Yang whose telephone number is 571-2701884. The examiner can normally be reached on IFP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-2721244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JY

/Roy King/  
Supervisory Patent Examiner, Art Unit 1793